

Building Research Establishment Domestic Energy Model (BREDEM)

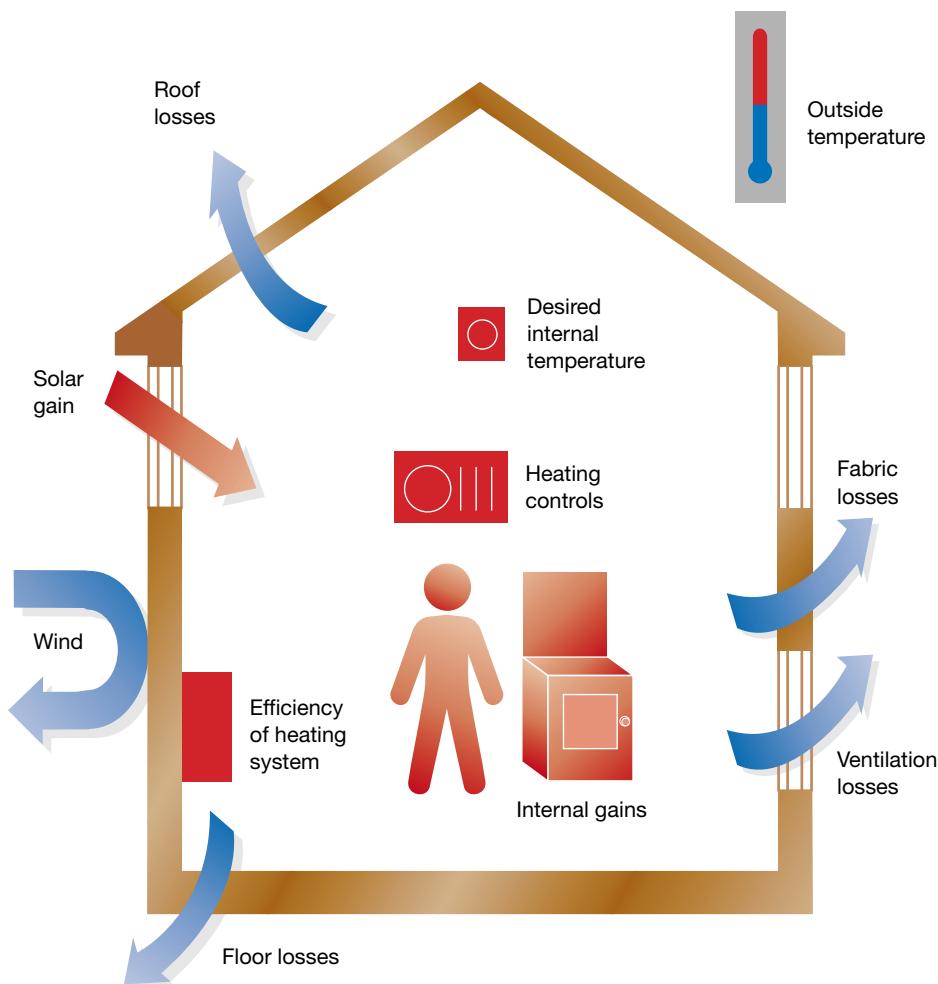


Figure 1 Key factors considered by BREDEM

BREDEM is the name given to a family of simple but reliable energy calculation procedures for dwellings. It was first developed in the early 1980s and, as a result of continuous testing and development, it has become very widely used. This leaflet provides an introduction to BREDEM and some of its many uses.

HOW CAN BREDEM HELP YOU?

BREDEM can be used for:

- estimating energy requirements in different dwelling types
- estimating possible running costs of a property
- ensuring the most appropriate measures are selected when upgrading existing dwellings
- estimating the savings arising from energy efficiency measures
- calculating an energy rating for a dwelling
- estimating internal temperature conditions for a given energy input.

Underpinned by BREDEM is the Standard Assessment Procedure (SAP) which is used for:

- checking compliance with Building Regulations (Part L)
- calculating the SAP rating for a dwelling.



ENERGY EFFICIENCY

BEST PRACTICE
PROGRAMME

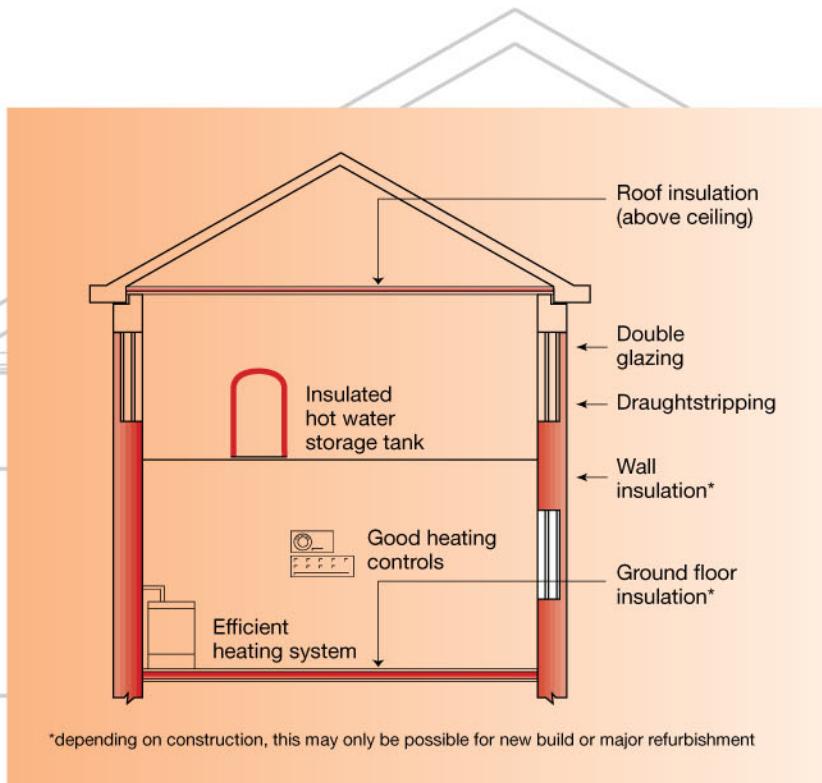


Figure 2 Typical energy efficiency improvements that may be considered by BREDEM

Using less energy has a threefold effect:

- **the corresponding energy cost will be reduced**
- **the rate of depletion of fossil fuel reserves will be reduced**
- **the emission of carbon dioxide (CO_2), which is the most abundant greenhouse gas and a major contributor to global warming, will be reduced.**

BREDEM is a simple but reliable method of estimating the energy use, and hence the energy efficiency, of dwellings. Model inputs include physical characteristics of the dwelling and heating system plus occupancy-related factors.

BREDEM exists both as a worksheet and as computer programs to assist architects, designers and others who need to calculate dwelling energy use and the likely effects of energy efficiency measures. BREDEM underpins the Government's Standard Assessment Procedure for energy rating of dwellings (SAP) which is incorporated within current Building Regulations.

It is well known that domestic energy use is not only dependent on the physical characteristics of the dwelling but also on the lifestyle of the occupants. BREDEM considers both of these in order to produce realistic estimates of domestic energy use. Figure 1 (page 1) illustrates some of the factors which are considered in the model.

BREDEM can help to reduce energy consumption by assisting with the energy efficient design and refurbishment of dwellings. Figure 2 illustrates typical energy efficiency improvements that can be considered when using BREDEM.

HOW ACCURATE ARE BREDEM PREDICTIONS?

BREDEM predictions have been subjected to rigorous tests, comparing them to actual energy use in dwellings as well as with more detailed simulation models. Given all of the necessary input data, the model's annual space heating energy use predictions are typically within about 10% of actual measurements.

FURTHER INFORMATION

Further information on BREDEM can be found in the Building Research Establishment's Information Paper (IP) 4/95, 'A guide to the development of BREDEM', available from the BRE Bookshop (tel 01923 664444) or BRE's publisher CRC Publications.

For further information on SAP and the Department of the Environment's Energy Efficiency Best Practice programme, contact the BRECSU Enquiries Bureau (details below).

Energy Efficiency Best Practice in Housing

Tel: 0845 120 7799

www.est.org.uk/bestpractice

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